



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/784,072

02/16/2001

Karim El Malki

040000-682

4894

27045

7590

07/06/2004

ERICSSON INC.  
6300 LEGACY DRIVE  
M/S EVR C11  
PLANO, TX 75024

EXAMINER

KADING, JOSHUA A

ART UNIT

PAPER NUMBER

2661

5

DATE MAILED: 07/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/784,072

Applicant(s)

MALKI ET AL.

Examiner

Joshua Kading

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

5       The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being  
indefinite for failing to particularly point out and distinctly claim the subject matter which  
10   applicant regards as the invention.

Claim 13, lines 4-5 state "the mobile node requires bi-casting of packets and the  
length of time for which bi-casting of packets is required." Where in the specification  
does applicant discuss the required length of time for bi-casting of packets? The  
15   specification mentions a "lifetime" field and a "bi-casting" field but no link between the  
two, see page 14, lines 17-23. Is the lifetime used to determine the length of time  
required for bi-casting or is there something else, like a timer of some kind?

Claim 14 (and thus dependent claims 15 and 16) recites the limitation "at least  
20   another one of the mobile node's current addresses" in lines 4-5. There is insufficient  
antecedent basis for this limitation in the claim. Where in claim 1 or 14 does applicant  
claim more than one current address for the mobile node?

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10

Claims 1-3 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over La Porta et al. (U.S. Patent 6,496,505 B2).

Regarding claim 1, La Porta discloses "a method for routing packets to a mobile  
15 node comprising the steps of:

providing an address update, including a regional address associated with the mobile node, to a node communicating with the mobile node (col. 9, lines 59-67 being registered in a home domain, the mobile has been associated with a regional address and when the node is in communication with a correspondent node (node in  
20 communication with the mobile), the correspondent node will be notified of the regional address update, see col. 5, lines 62-64);

determining, at the node associated with the regional address, the current address of the mobile node (col. 10, lines 1-15, if the packets are tunneled to the mobile in the foreign domain, the home domain (the node associated with the regional address)  
25 must have known or determined the current address of the mobile in order to tunnel the packets);

routing the received packets to a node associated with the current address of the mobile node (col. 10, lines 1-15, where the packets are tunneled (routed) to the current address of the mobile in the foreign domain);

forwarding packets, from the node associated with the current address, to the  
5 mobile node (col. 10, lines 1-15)."

However, La Porta does not explicitly disclose "sending packets, from the node communicating with the mobile node, to a node associated with the regional address; receiving packets at the node associated with the regional address..." Although La Porta does not explicitly disclose sending and receiving packets at the node associated  
10 with the regional address, it is strongly suggested that this must have happened due to the fact that the home domain knows to tunnel data from the correspondent node (or any other node communicating with the mobile) to the mobile.

It would have been obvious to one with ordinary skill in the art at the time of invention to include the sending and receiving of packets at the node associated with  
15 the regional address for the purpose of correctly routing data to the mobile node in the foreign domain. The motivation for doing this is that a mobile has the opportunity to travel into a foreign domain and still receive data.

Regarding claim 17, La Porta discloses "a network comprising:  
20 a mobile node (figure 2, element 114 is initially in the home domain and then moves to the foreign domain);

a node communicating with the mobile node (figure 2, element 110 is the correspondent node that communicates with the mobile node), wherein the mobile node provides an address update, including a regional address associated with the mobile node, to the node communicating with the mobile node (col. 9, lines 59-67 being registered in a home domain, the mobile has been associated with a regional address and when the node is in communication with a correspondent node (node in communication with the mobile), the correspondent node will be notified of the regional address update, see col. 5, lines 62-64);

a node associated with the regional address (figure 2, element 150 where the regional address is the home domain address of the mobile and thusly associated with the root router of the home domain)...;

a node associated with a current address of the mobile node (figure 2, element R6 is the root router node of the foreign domain), wherein the node associated with the current address of the mobile node receives packets from the node associated with the regional address of the mobile node and sends the received packets to the mobile node (col. 10, lines 1-15, where the packets are tunneled (routed) to the current address of the mobile in the foreign domain)."

However, La Porta does not explicitly disclose "...wherein the node communicating with the mobile node sends packets to the node associated with the regional address". Although La Porta does not explicitly disclose communicating with the node associated with the regional address, it is strongly suggested that this must have happened due to the fact that the home domain knows to tunnel data from the

Art Unit: 2661

correspondent node (or any other node communicating with the mobile) to the mobile in the foreign domain.

It would have been obvious to one with ordinary skill in the art at the time of invention to include the sending and receiving of packets at the node associated with the regional address for the purpose of correctly routing data to the mobile node in the foreign domain. The motivation for doing this is that a mobile has the opportunity to travel into a foreign domain and still receive data.

Regarding claims 2 and 18, La Porta discloses the method of claim 1 and the network of claim 17. Although La Porta lacks the explicit communicating of the correspondent node with the regional node as in claims 1 and 17, La Porta does further disclose "the network operates in accordance with mobile Internet Protocol version 6 (MIPv6) protocol (col. 9, lines 1-15 where La Porta is suggesting that the invention is capable of functioning using IPv6)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the IPv6 with the method of claim 1 and the network of claim 7 for the purpose of increasing the number of available IP addresses available to assign to mobiles. The motivation being that the more IP addresses available the more mobiles (customers) can use the network.

Regarding claims 3 and 19, La Porta discloses the method of claim 1 and the network of claim 17. Although La Porta lacks the explicit communicating of the correspondent node with the regional node as in claims 1 and 17, La Porta does further

Art Unit: 2661

disclose "the node associated with the regional address implements mobility anchor point functionality (col. 10, lines 11-15 whereby not having to change the COA, it is implied that the node has the mobility anchor point functionality as defined by applicant in the specification, page 8, lines 8-14)." It would have been obvious to one with

5 ordinary skill in the art at the time of invention to include the mobility anchor point with the method of claim 1 and the network of claim 17 for the same reasons and motivation as in claims 1 and 17.

Claims 4, 11, 20, and 27 are rejected under 35 U.S.C. 103(a) as being  
10 unpatentable over La Porta et al. in view of applicant's admitted prior art (AAPA).

Regarding claims 4 and 20, La Porta discloses the method of claim 1 and the network of claim 17. However, La Porta lacks what AAPA discloses, "the node associated with the current address is an access router (figure 2, elements 210, 215,  
15 220, 230, and 250)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the access router with the method of claim 1 and the network of claim 17 for the purpose of accessing the correspondent node (AAPA, specification, page 2, lines 16-19). The motivation for allowing access to the correspondent node is so that other nodes from different domains can communicate  
20 with that node.



Regarding claims 11 and 27, La Porta discloses the method of claim 1 and the network of claim 17. However, La Porta lacks what AAPA disclose, "the packets are sent from the node communicating with the mobile node to the mobile node without being routed by a home agent associated with the mobile node (specification, page 4, lines 8-10)." It would have been obvious to one with ordinary skill in the art at the time of invention to have the packets not routed through the home agent for the purpose of allowing the packets to be delivered faster. The motivation for faster delivery of packets is to improve on efficiency of packet delivery and processing.

Claims 5-10, 12-16, 21-26, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over La Porta et al. in view of Khalil et al. (U.S. Patent 6,578,085 B1).

Regarding claims 5 and 21, La Porta discloses the method of claim 1 and the network of claim 17. However, La Porta lacks what Khalil suggests, "receiving a message, from the node associated with the mobile node's current address, by the mobile node (col. 5, lines 66-col. 6, lines 1-16 where if the mobile node maintains a list of correspondent nodes (regional addresses nodes), the mobile must have received this information from the correspondent nodes, and since all messages travel through the node associated with the mobile node's current address to the mobile node, so to must have the message containing information on all regional addresses), wherein the message indicates the availability of nodes which can be used as regional addresses

Art Unit: 2661

for the mobile node (col. 5, lines 66-col. 6, lines 1-16 where the correspondent nodes are in the list because they are available, thus they indicate availability).” It would have been obvious to one with ordinary skill in the art at the time of invention to include the regional addresses message with the method of claim 1 and the network of claim 7 for the purpose of updating the bindings associated with each correspondent node. The motivation for this is faster communication, or route optimization.

Regarding claims 12 and 28, La Porta discloses the method of claim 1 and the network of claim 17. However, La Porta lacks what Khalil discloses, “sending an update message from the mobile node to the node associated with the mobile node's regional address (col. 5, lines 66-col. 6, lines 1-16 where the update message is the list of correspondent nodes), wherein the update message includes an address associated with a node which the mobile node will be using as its new regional address (col. 5, lines 66-col. 6, lines 1-16 the mobile node's message contains information about updating its regional address with correspondent nodes it is in communication with).”

La Porta further discloses what was already claimed in claims 1 and 17, “receiving packets by the node associated with the mobile node's regional address (although La Porta does not explicitly disclose receiving packets at the node associated with the regional address, it is strongly suggested that this must have happened due to the fact that the home domain knows to tunnel data from the correspondent node (or any other node communicating with the mobile) to the mobile); and forwarding the

received packets to the node associated with the mobile node's current address and to the node associated with the mobile node's new regional address (col. 10, lines 1-15)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the sending of an update message and receiving of packets at the node associated with the regional address for the purpose of correctly routing data to the mobile node in the foreign domain. The motivation for doing this is that a mobile has the opportunity to travel into a foreign domain and still receive data.

The length of time for bi-casting is required is going to be taken as the time it takes the packet to be transmitted and received, i.e. the full life of the packet.

Regarding claims 13 and 29, La Porta discloses the method of claim 12 and the network of claim 28. However, La Porta lacks what Khalil discloses, "the update message is a binding update (col. 6, lines 3-10) and wherein the binding update includes an indication that the mobile node is registering with the node associated with the mobile node's new regional address (col. 6, lines 3-10 where the ACK to the binding update signifies that the correspondent node understands the new address of the mobile), that the mobile node requires bi-casting of packets and the length of time for which bi-casting of packets is required." It would have been obvious to one with ordinary skill in the art at the time of invention to include the binding update with the method of claim 12 and the network of claim 28 for the purpose of forwarding data between the mobile and correspondent nodes. The motivation for this is faster communication, or route optimization.

Claims 14 and 30 are being treated as if "at least another one of the mobile node's current addresses" means a list of addresses corresponding to correspondent nodes the mobile is in communication with.

5           Regarding claims 14 and 30, La Porta discloses the method of claim 1 and the network of claim 17. However, La Porta lacks what Khalil discloses "sending a message, from the mobile node to the node associated with the mobile node's regional address, requesting that packets be routed to the mobile node's current address and at least another one of the mobile node's current addresses (col. 5, lines 66-col. 6, lines 1-10 16 where the message requesting routing of the packets is the registration request); routing a first group of packets, from the node associated with the mobile node's regional address, to a node associated with the mobile node's current address (col. 5, lines 66-col. 6, lines 1-16 where it is suggested that the correspondent nodes will then have their messages routed to the mobile node's current address); and routing a 15 second group of packets, from the node associated with the mobile node's regional address, to a node associated with the with the at least another one of the mobile node's current addresses (col. 5, lines 66-col. 6, lines 1-16 where it is again suggested that each correspondent node that responds with an ACK will have its data routed to the mobile node's current address)." It would have been obvious to one with ordinary skill in 20 the art at the time of invention to include the routing of packets to the mobile node's current address with the method of claim 1 and the network of claim 17 for the purpose

of forwarding data between the mobile and correspondent nodes. The motivation for this is faster communication, or route optimization.

Regarding claims 15 and 31, La Porta and Khalil disclose the method of claim 14 and the network of claim 30. However, La Porta and Khalil both explicitly lack "determining, by the node associated with the mobile node's regional address, a load on the node associated with the mobile node's current address and a load on the node associated with the at least another one of the mobile node's current addresses, wherein packets are selected for the first group or the second group based on the determined loads." Although both La Porta and Khalil do not explicitly disclose choosing a group based on a load, it would have been obvious to one with ordinary skill in the art to do so. It is well known in the art that paths, routes, or groups are routinely chosen based on their load, i.e. load balancing. The load of a path or group is always important and must always be taken into account because it has direct bearing on the utilization (bandwidth usage) of the network. If any given group or path has a high utilization, it is less effective at delivering new messages or users than a group or path that has a low utilization. The motivation for choosing a lower utilization than a higher utilization is that the lower utilization path or group has less users and less chance of data congestion or data corruption.

Regarding claims 16 and 32, La Porta and Khalil disclose the method of claim 14 and the network of claim 30. However, La Porta lacks what Khalil further discloses, "the

Art Unit: 2661

message is a binding update (col. 6, lines 3-10).” It would have been obvious to one with ordinary skill in the art at the time of invention to include the binding update with the method of claim 14 and the network of claim 30 for the purpose of forwarding data between the mobile and correspondent nodes. The motivation for this is faster

5 communication, or route optimization.

Regarding claims 6 and 22, La Porta and Khalil disclose the method of claim 5 and the network of claim 21. However, Khalil lacks what La Porta further discloses, “the nodes which can be used as regional addresses for the mobile node have mobility

10 anchor point functionality and wherein the message is a router advertisement containing a mobility anchor point option (col. 9, lines 49-59 where the DHCP function allows the routers (nodes) to have mobility anchor point functionality by assigned the COA to mobiles within the domain, such as in figure 2; further by allowing the DHCP function to be implemented in any node, node associated with a regional address can have this

15 function).” It would have been obvious to one with ordinary skill in the art at the time of invention to include the mobility anchor point functionality with the nodes associated with the regional addresses with the method of claim 5 and the network of claim 21 for the same reasons and motivation as in claims 1 and 17.

20 Regarding claims 7 and 23, La Porta and Khalil disclose the method of claim 5 and the network of claim 21. However, La Porta lacks what Khalil further discloses, “receiving the message by the node associated with the mobile node's current address

Art Unit: 2661

(col. 5, lines 66-col. 6, lines 1-16 where if the mobile node maintains a list of correspondent nodes (regional addresses nodes), the mobile must have received this information from the correspondent nodes, and since all messages travel through the node associated with the mobile node's current address to the mobile node, so to must  
5 have the message containing information on all regional addresses)..."

Khalil also lacks what La Porta further discloses, "...wherein the message is received by the node associated with the mobile node's current address via a hierarchy of routers (figure 2 shows a hierarchy of routers that the messages must traverse to get to the mobile)."

10 It would have been obvious to one with ordinary skill in the art at the time of invention to include the receiving of messages at the current address node with the method of claim 5 and the network of claim 21 for the same reasons and motivation as in claims 5 and 21.

15 Regarding claims 8 and 24, La Porta and Khalil disclose the method of claim 5 and the network of claim 21. However, La Porta lacks what Khalil further discloses, "selecting, by the mobile node, a new regional address based upon information contained in the message (col. 5, lines 66-col. 6, lines 1-16 since the mobile can only communicate with one correspondent node at a time, the mobile must select a  
20 correspondent node to communicate with and the list must be further narrowed down by which correspondent nodes have responded with an ACK message)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the

selecting of correspondent nodes with the method of claim 5 and the network of claim 21 for the same reasons and motivation as in claims 5 and 21.

Regarding claims 9 and 25, La Porta and Khalil disclose the method of claim 8 and the network of claim 24. However, La Porta lacks what Khalil further discloses, "the new regional address is selected based upon one of a distance of a node associated with the new regional address and the mobile node and a preference for the node associated with the new regional address (col. 5, lines 66-col. 6, lines 1-16 where, as in claims 8 and 24, the mobile selects a correspondent node based on a preference, for example the receipt of an ACK)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the selecting based on a preference with the method of claim 8 and the network of claim 24 for the same reasons and motivation as in claim 8 and 24.

Regarding claims 10 and 26, La Porta and Khalil disclose the method of claim 9 and the network of claim 25. However, La Porta lacks what Khalil further discloses, "the preference for the node associated with the new regional address is based upon one of network loading, network failures and local network policies (col. 5, lines 66-col. 6, lines 1-16 where again, as in claims 8 and 24, the selection can be based on the receipt of an ACK, and, as is known in the art, a non-receipt of an ACK indicates a generic type of network failure)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the preference based on a network failure with the method



Art Unit: 2661

of claim 9 and the network of claim 25 for the same reasons and motivation as claims 9 and 25.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (703) 305-0342. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (703) 305-4703. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joshua Kading  
Examiner  
Art Unit 2661

June 25, 2004



KENNETH VANDERPUYE  
PRIMARY EXAMINER